

**SEMI-ANNUAL GROUNDWATER MONITORING REPORT  
THIRD AND FOURTH QUARTERS 2003  
Presidio of San Francisco, California**

**E.1 EXECUTIVE ANNUAL SUMMARY**

The Presidio-Wide Quarterly Groundwater Monitoring Program continued, with modifications, during Third and Fourth Quarters 2003. Sampling occurred during the second and third full weeks of August, and the first and second weeks of December, 2003. This executive summary incorporates significant findings which were published in the *Semi-Annual Groundwater Monitoring Report, First and Second Quarters 2003, Presidio of San Francisco* (Treadwell & Rollo, 2003f) and serves as an annual summary of the groundwater monitoring program at the Presidio for 2003.

**E.1.1 Changes to the Quarterly Groundwater Monitoring Program Third and Fourth Quarters 2003**

During Third Quarter 2003, the only modification that was made to the quarterly groundwater monitoring program was to collect a special duplicate sample from Building 1349 Area monitoring well 1349MW100, for investigations not directly related to the groundwater monitoring program.

Before Fourth Quarter 2003, Building 1065 Area piezometer 1065TMW03A was appropriately abandoned and removed as part of an interim action. During Fourth Quarter 2003, monitoring well 1047MW101 was added to the quarterly groundwater monitoring program.

Beginning in Fourth Quarter 2003, the practice of collecting groundwater level measurements between two and a half and three and a half hours after low tide at the Building 900s Area, the DEH Area, the Building 637 area, the Commissary/PX Area, and the former Coast Guard Station was ceased. Also, the sampling frequency of three wells at Landfill 10, LF10GW01, LF10GW02, and LF10GW03 was reduced from quarterly to annual.

**E.1.2 Significant Observations and Accomplishments in Third and Fourth Quarters 2003**

Significant changes or trends in groundwater characteristics and groundwater chemistry and significant site-specific milestones are discussed below. Specific changes to proposed site-specific sampling schedules are discussed in the site-specific sections of Appendix A.

#### **E.1.2.1 Building 900s Area (Appendix A-1)**

No VOC concentrations detected during Third or Fourth Quarters 2003 were found to exceed their respective RAP specified cleanup levels. The concentration of TCE detected within 979GW111R during Third Quarter 2003 (41 µg/L) has decreased from the relatively high values reported during First and Second Quarters 2003 (65 and 64 µg/L, respectively), and remains below the RAP specified cleanup level of 81 µg/L.

Concentrations of benzene, ethylbenzene, and/or total xylenes generally returned to historic levels during Third Quarter 2003 within monitoring wells 937GW32R, 937GW38, 937GW42, and 937GW108. These compounds were detected at new high concentrations during either First or Second Quarters 2003. Benzene, ethylbenzene, and total xylenes do not have RAP specified cleanup levels.

The relative concentration ratios of TCE, cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride within Building 900s groundwater samples continue to indicate that natural biodegradation processes are occurring. The ratios of TCE, cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride will continue to be monitored in future quarters.

Groundwater monitoring will continue per the Crissy Field RAP in 2004. The first five-year review will be completed in 2007.

#### **E.1.2.2 Landfill 8 (Appendix A-2)**

No sulfide, PAHs, OCPs, PCBs, chlorinated herbicides, or VOCs were detected in any Landfill 8 groundwater samples collected during 2003. No PAHs, OCPs, PCBs, or chlorinated herbicides have ever been detected above laboratory limits within any groundwater samples collected from Landfill 8 monitoring wells. VOCs have not been detected at the site since Third Quarter 1996.

Cyanide was detected for the first time in the QC duplicate sample from monitoring well LF08GW01 during Third Quarter 2003 at a qualified concentration of 0.005 J- mg/L, which is only slightly lower than its applicable cleanup level of 0.0052 mg/L. The detected concentration (0.005 mg/L) was qualified with a J-, which indicates that the detected concentration was biased low during data validation due to a low surrogate recovery. The surface water cleanup level for cyanide (0.0052 mg/L) listed in Table 7-6 of the Cleanup Levels Document is applicable to Landfill 8 groundwater due to the potential for groundwater to exfiltrate directly to surface water. Cyanide was not detected above the laboratory method detection limit in either the primary or duplicate sample collected from this well. This is only the second cyanide detection at Landfill 8. Cyanide was previously detected within LF08GW06 during Second Quarter 2002. Future detections of cyanide will be closely monitored and trends will be established, as they become apparent.

#### **E.1.2.3 DEH Area (Appendix A-3)**

Groundwater flow directions and gradients during Third and Fourth Quarters 2003 are consistent with historic interpretations. No groundwater samples were collected at the DEH Area during Third or Fourth Quarters 2003, in accordance with the approved plan. The Trust submitted a site closure request to the DTSC in October 2003. DTSC has requested an additional round of groundwater sampling, which will be performed during First Quarter 2004.

#### **E.1.2.4 Battery Howe/Wagner (Appendix A-4)**

Groundwater elevations, gradients, and flow directions are consistent with historical values and interpretations. Concentrations of reported compounds within the Battery Howe/Wagner monitoring wells have remained within historic ranges during the Third and Fourth Quarters 2003.

#### **E.1.2.5 Building 637 Area (Appendix A-5)**

Per the Building 637 CAP, the sampling frequency of monitoring wells 637-34, 637-35, and 637-37 was reduced to semi-annual beginning in Second Quarter 2003. Building 637 CAP groundwater monitoring requirements were met within monitoring well 637-36 and groundwater sampling was conducted on a semi-annual basis within this well beginning in Third Quarter 2003.

The groundwater flow directions in the A1 and A2 zones have generally remained constant since the construction of the Crissy Field Tidal Marsh. Groundwater concentrations are below the saltwater protection zone cleanup levels. VOC concentrations in the A2 zone are below promulgated MCLs.

The required number of sampling events has been met. The Building 637 CAP Closure Report is under preparation, and data are being evaluated.

#### **E.1.2.6 Fill Site 1, Landfill 2, El Polin Spring, Tennessee Hollow, And Upgradient Wells (Appendix A-6)**

No significant trends or observations were identified during 2003. Due to potential for human exposure, total dissolved solids, dissolved oxygen, and cyanide will be monitored quarterly at El Polin Spring to ensure potential changes in water chemistry are identified in a timely manner.

#### **E.1.2.7 Landfill E (Appendix A-7)**

Groundwater elevations, gradients, and flow directions are consistent with historical values and interpretations. No significant trends or observations were identified at Landfill E during the

Third or Fourth Quarter 2003. However, sufficient data has not yet been collected to determine trends for new wells DAEGW101 through DAEGW104.

The sampling frequency for wells DAEGW03 through DAEGW08 was reduced to semi-annual beginning in Second Quarter 2003. The analytical suites for the recently installed 100-series wells were modified beginning with the Second Quarter 2003 to match the existing site wells. Hexavalent chromium analysis was discontinued at all site wells beginning with Second Quarter 2003.

There are no other proposed changes to the quarterly monitoring procedures at this site.

#### **E.1.2.8      Landfill 4 (Appendix A-8)**

Five new monitoring wells were installed and sampled as part of the Landfill 4 Remedial Action during First Quarter 2003. These wells were added to the Presidio-wide Quarterly Groundwater Monitoring Program beginning with the Second Quarter 2003 and will be sampled quarterly, in accordance with the RAP. No significant results were observed in the samples collected during 2003 except for the first-time detection of beta-BHC in LF4GW102 during First and Second Quarters 2003 as discussed in the *Draft Semi-Annual Groundwater Monitoring Report, First and Second Quarters 2003* (Treadwell & Rollo 2003f). Beta-BHC was not detected in any monitoring wells during either Third or Fourth Quarters 2003. OCP concentrations will continue to be monitored within Landfill 4 monitoring wells. There are no proposed changes to the monitoring procedures at this site.

#### **E.1.2.9      Fill Site 5 (Appendix A-9)**

Several TPH, VOC, OCP, chlorinated herbicides, and PAH compounds were detected in the upgradient Building 1349 monitoring well 1349MW100 samples during 2003.

Gamma-BHC was detected for the first time above its FS 5 RAP cleanup level (0.05 µg/L) within both the primary and the duplicate samples collected from 1349MW102 during Fourth Quarter 2003. Gamma-BHC was not detected within 1349MW102 during Third Quarter 2003.

Fill Site 5 seep LF5SP100 was sampled for the first time during Fourth Quarter 2003. The seep sample was collected directly from the surface water flow and contained some sediment. The surface water seep sample was analyzed for analytes listed in Table 1B. The seep sample was analyzed for total metals (i.e. the sample was not filtered), in accordance with the proposed plan.

Total lead was detected at concentrations exceeding the FS 5 RAP cleanup level for lead (3.2 µg/L) within the primary, duplicate and quality control duplicate samples collected from LF5SP100 during Fourth Quarter 2003. The detected concentrations, ranging from 14 to 18 µg/L, were at least 4 times higher than the RAP cleanup level within all three samples. The sediment present in the seep sample may have contributed to the elevated levels of lead in the

sample. Detected lead concentrations will continue to be monitored in the future. Dissolved lead has never been detected within any Fill Site 5 monitoring wells.

Groundwater monitoring is scheduled to continue on a quarterly basis at FS 5, in accordance with the FS 5 RAP. There are no proposed changes to the groundwater monitoring program at this site.

#### **E.1.2.10 Building 231/207 Area (Appendix A-10)**

Sampling frequency was reduced to semi-annual beginning in Second Quarter 2003.

Several wells had new high and low detections of VOCs during First Quarter 2003, but clear trends are not apparent as of Fourth Quarter 2003.

Four wells had new high concentrations of TPHd during Third Quarter 2003. Additionally, TPHfo was detected for the first time within monitoring well 231GW30 during Third Quarter 2003. However, no clear trends in TPHd or TPHfo data are apparent.

The Building 207/231 Area CAP is pending. Reduction in sampling frequency to annual is currently proposed for all wells until the CAP is finalized. Sampling of monitoring well 231GW09 has been modified to comply with the sampling schedule for Fill Site 6A. There are no other proposed changes to the groundwater sampling schedule or procedures at this site.

#### **E.1.2.11 Building 1065/1027 Area (Appendix A-11)**

New wells and piezometers installed as part of the Building 1065 Site Investigation were added to the Presidio-wide Groundwater Monitoring Program beginning in Second Quarter 2003. Free product was observed in piezometer 1065TMW03A during First, Second, and Third Quarters 2003 and therefore this piezometer was not sampled. This piezometer was appropriately abandoned and removed as part of an interim action before the Fourth Quarter 2003 monitoring event.

The presence of BTEX compounds and TPH within shallow monitoring well 1065MW9A and shallow piezometer 1065PZ1A, and the lack of BTEX compounds and TPH within the associated intermediate monitoring wells and piezometers suggests that BTEX and TPH impacts are limited to this small area within the shallow zone.

Shallow and intermediate groundwater levels appeared to be dropping in the southern and western portions of the Building 1065/1027 Area during First and Second Quarters 2003 in response to dewatering operations at the nearby Letterman redevelopment. As discussed in detail in Sections 4.1.1 and 4.1.2, groundwater levels in this area appear to have reversed and are generally increasing as of Fourth Quarter 2003 in response to the cessation of dewatering operations and the onset of the rainy season. Potential changes to the groundwater flow patterns

and any potential impact to contaminant migration will continue to be evaluated in future quarterly events.

MTBE continues to be sporadically detected at low levels within some piezometers and monitoring wells at the Building 1065 Area. However, clear trends in MTBE concentration or geographic distribution have not been identified and these detections may not represent a significant impact to groundwater.

#### **E.1.2.12 Building 215 (Appendix A-12)**

Per the approved sampling schedules, Building 215 Area monitoring wells were only sampled during First Quarter 2003. Very low VOC concentrations have been detected within Building 215 Area monitoring wells 215GW01 and 215GW02 for two consecutive sampling events. The detected concentrations do not appear to represent an increasing trend. If the current trend of very few and low contaminant detections in the groundwater beneath Building 215 continues, this site should be considered for removal from the monitoring program.

#### **E.1.2.13 Nike Missile Facility (Appendix A-13)**

Per the approved sampling schedules, Nike Missile Facility monitoring wells were only sampled during First Quarter 2003. First time low-level detections of benzene and/or toluene were observed during First Quarter 2003 within samples from Nike Missile Facility monitoring wells NKGW02, NKGW04, and NKGW05. Future detections of VOCs will be closely monitored to evaluate potential trends.

#### **E.1.2.14 Building 651 (Appendix A-14)**

Groundwater sampling was not proposed for any Building 651 monitoring wells during 2003. Groundwater elevations during 2003 were consistent with historical values. Both Building 651 Area wells are proposed for abandonment per the recommendation in the Group II mini-CAP document, pending final publication. Therefore, these wells are proposed for removal from the Presidio-wide Groundwater Monitoring Program.

#### **E.1.2.15 Landfill 10 (Appendix A-15)**

Beginning in the Fourth Quarter 2003, sampling frequency was reduced from quarterly to annual at Landfill 10 monitoring wells LF10GW01, LF10GW02, and LF10GW03.

MTBE continued to be sporadically detected at low levels in some Landfill 10 monitoring wells during 2003. However, clear trends in MTBE concentration or geographic distribution have not been identified and these detections may not represent an impact to groundwater.

There are no proposed changes to the quarterly monitoring program at this site.

#### **E.1.2.16 Commissary/PX Area (Appendix A-16)**

Arsenic was detected at concentrations exceeding its applicable groundwater screening level (10 µg/L) in samples collected from monitoring wells 610GW102 and 610GW103 during Third and Fourth Quarters 2003, respectively.

MTBE and total arsenic, chromium, copper, lead, nickel, and zinc were detected above SI groundwater screening levels within surface water seeps 610SP01 and/or 610SP02 during Third and/or Fourth Quarters 2003. The total metals detected in excess of groundwater screening levels will continue to be monitored and trends, if any, will be developed following the fourth sampling event for total metals within these seeps.

No other significant findings or data trends were observed during 2003.

Additionally, the Commissary/PX Area CAP is currently in preparation.

#### **E.1.2.17 Graded Area 9 (Appendix A-17)**

Graded Area 9 wells were either dry or contained insufficient water throughout the groundwater sampling events of 2002 and 2003. Monitoring wells LF9GW100A and LF9GW100B have periodically contained a measurable amount of groundwater, but neither well has contained a sufficient amount of water to collect a sample. All Graded Area 9 wells will continue to be proposed for sampling on a quarterly basis.

#### **E.1.2.18 Fill Site 6 (Appendix A-18)**

No significant observations or trends were identified during either the First or Second Quarter 2003, except the first time detection of beryllium and cadmium in monitoring well LF6GW102. No significant observations or trends were identified during either Third or Fourth Quarter 2003 except the first time detection of thallium in monitoring well 231GW09. Beginning with the Second Quarter 2003 monitoring event, general chemistry analysis was added to monitoring well LF6GW103 and PCB analysis was added to monitoring wells LF6GW100, LF6GW101, and LF6GW102 to comply with requirements of the *Remedial Action Plan for Fill Site 6A and Baker Beach Disturbed Areas 3 and 4* (Treadwell & Rollo, 2003c).

In preparation for the Fill Site 6A remedial action, monitoring well LFGW102 will be abandoned. Per the RAP, additional monitoring wells will be installed and quarterly sampling conducted following the remedial excavation activities.

#### **E.1.2.19 Building 1349 (Appendix A-19)**

Several TPH, VOC, OCP, and PAH compounds were detected in monitoring well 1349MW100 during 2003. Additionally, chlorinated herbicides were detected within 1349MW100 during Third Quarter 2003. This well is the only Building 1349 Area monitoring well with groundwater screening level exceedances during 2003. Benzene, TPHg, and TPHd were all detected above their respective Building 1349 Area SI screening levels during either Third or Fourth Quarters 2003. Benzo(a)anthracene was not detected within 1349MW100 during either Third or Fourth Quarters 2003, for the first time.

Several OCPs continue to be detected within samples from 1349MW100. Additionally, OCPs were detected for the first time above laboratory limits within both the primary and the duplicate samples collected from monitoring well 1349MW102 during Fourth Quarter 2003. Monitoring well 1349MW102 is located west (cross-gradient) of 1349MW100. The presence of OCPs within 1349MW102 may indicate that the OCPs are migrating from 1349MW100. Future OCP detections will be closely monitored within Building 1349 Area monitoring wells and trends will be identified as they become apparent. Several detected concentrations of OCPs exceed their associated drinking water cleanup levels. Appendix A Section A-19 discusses OCP cleanup levels and their associated exceedances in greater detail.

Dissolved arsenic, iron, and manganese continue to be detected within monitoring well 1349MW100 at concentrations generally higher than within the other Building 1349 monitoring wells. Additionally, the concentrations of these dissolved metals have been increasing over time within this well. Arsenic is commonly found in the natural environment and is often present in combination with iron and manganese oxides in a reducing environment, as may be present at this well due to the degradation of petroleum hydrocarbons.

No other significant observations or trends were identified during 2003.